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actly in the same way as this latter involves that for four : and, to be correct and general, it must yield the eight-square form when, by the suppression of four of the binomials in any row, the sixteen squares are actually reduced to eight.

Now it is shewn that these conditions cannot be accomplished ; unless, indeed, under special and peculiar limitations, which are pointed out. In proceeding to construct the sixteen-square form, providing, as we go on, for the demands of that for eight, since these are necessarily implied in those for sixteen, we find our progress, beyond a certain stage, to be impossible ; inasmuch as a step further imperatively requires that a preceding step should be modified, which modification is fatal to the accuracy of the portion already constructed. It is hence concluded that the eight-square formula cannot be a particular case of one more general for sixteen, but is itself the most advanced *modular theorem* that exists.

Towards the close of the paper the author enters upon some collateral investigations concerning squares and products; and, among other things, offers a short method of establishing, without imaginaries, a very beautiful triplet theorem discovered by John T. Graves, Esq., and printed, with its investigation, in the Philosophical Magazine for 1845.

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DECEMBER 13TH, 1847.

JOHN ANSTER, LL.D., in the Chair.

THE following letter from Mr. Staunton was read :

" *Longbridge House, near Warwick,*
" *Dec.* 4*th*, 1847.

" GENTLEMEN,—I have the pleasure of receiving, this morning, the Fyshers Irchington matrix, and lose no time in acknowledging its receipt, as I do with additional satisfaction, on account of the unanimous approbation of the exchange which has been made. I desire to convey my best thanks to the Council for their courtesy in entertaining my proposal of a measure, which seems to have placed a Limerick seal, and one of Warwickshire, in their more appropriate positions.

"I have the honour to be,
"Your obedient, humble Servant,
"WILLIAM STAUNTON.

"*The Royal Irish Academy.*"

The following letter, addressed to the President, from M. Wartmann, of Geneva, was read:

"MON CHER MONSIEUR,—J'ai bien reçu les extraits des Proceedings of the R. I. Academy et le billet que vous m'avez adressés il y a six mois. Dès lors ni les *Proceedings* promis à la Societé Vaudoise des sciences naturelles en échange des Bulletins qu'elle publie, ni les Nos. de ces mêmes Proceedings qui me manquent et que vous aviez bien voulu mè promettre (ainsi que mon ami le prof. Andrews de Belfast) ne nous sont parvenus. Mes fonctions comme professeur de physique à l'Académie de Genéve, où j'ai été appelé pour succéder a M. De la Rive, démissionnaire, ne m'ont pas permis de me rendre à Oxford où j'aurais peut-être eu le plaisir de vous rencontrer. J'ai donc pensé que vous me pardonneriez ces lignes que temoigneront du moins du vif intérêt qui la Société Vaudoise et moi-même nous portons aux publications de l'Académie.

"Toujours occupé des phénomènes si variés et si remarquables de l'induction electro-dynamique et magnêtique, j'ai été amené à construire un nouveau rhéotrope à *trois* roues qui sert à volonté: 1°, à rendre discontinu un courant voltaïque dans un conducteur donné; 2°, à le rendre discontinu et de sens alternatifs; 3°, à produire et à recueillir des courants induits directs; 4°, à produire et à recueillir des courants in-